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EXAMINER	
CORDRAY, DENNIS R	
ART UNIT	**PAPER NUMBER**
1731	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/677,545	XU, ERIC CHAO	
	Examiner	Art Unit	
	Dennis Cordray	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 11 December 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-16,18-23,28-34,36-39 and 42-49 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-16,18-23,28-34,36-39 and 42-49 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/11/2006 has been entered.

Response to Arguments

Applicant's arguments filed 12/11/2006 have been fully considered but they are not persuasive.

2. Applicant argues on p 15 that there is no disclosure in any one reference of adding sodium hydroxide alkaline peroxide both before and after refining and no basis for one of ordinary skill in the art to appreciate the efficacious results of such treatment. Applicant reiterates the test results disclosed in the instant Specification in Example set C and Figure 17 for various treatments with sodium hydroxide alkaline peroxide pre-refining, at the refiner eye and in the blow line in a post-refining treatment.

Prusas discloses pre-refining treatment with sodium hydroxide and peroxide and that, to obtain higher brightness, the pulp may be additionally bleached after refining by additional known bleaching steps (col 7, lines 11-13; col 8, lines 25-37, Table 1) while Cannell et al, which is used in the current rejections, ("The Future of BCTMP", Pulp and Paper, May 2000, supplied by applicant) teaches that a multistage impregnation with an

aqueous solution of DTPA, hydrogen peroxide and caustic; a primary refining stage; and a bleaching stage following the primary refining stage prior to any other process stages are typical steps of a BCTMP (bleached chemical thermomechanical pulp) process known to those of ordinary skill in the art (Fig 2). The combination of sodium hydroxide and hydrogen peroxide is one of the most commonly used bleaching combinations in the art and would have been an obvious choice for post-refining bleaching. Alternatively, why would it not have been obvious to use the same bleaching chemicals for post-refining treatment as used in pre-refining treatment? The amount of bleaching chemical added to a pulp is a known result-effective variable related to the whiteness of the pulp. It would have been obvious to one of ordinary skill in the art at the time of the invention to determine, through routine experimentation, the optimum amounts of bleaching chemicals added at the various points in the process to obtain the desired whiteness. Alternatively, why would it not have been obvious to add similar amounts of bleaching chemical before and after the refining step? Any other efficacious results would have resulted from the known and obvious treatments discussed above.

3. Applicant argues on pp 16-17 that Prusas teaches a first sodium hydroxide alkaline peroxide treatment to wood chips, removing the alkaline liquor from the chips, then impregnating with and cooking in a sulfite liquor, and finally refining the chips without removing all of the sulfite liquor. Applicant further argues that Prusas does not disclose, teach or hint that any alkaline peroxide carries over into the refiner or is added at the refiner. Applicant also argues that Prusas does not teach a pressurized refiner.

Applicant argues that the Haynes reference does not disclose any alkaline peroxide treatment upstream of the refiner. Applicant concludes that there is no reason to combine Prusas with Haynes et al to introduce an alkaline peroxide pretreatment and skip the sulfite step, and add alkaline peroxide after refining and optionally at the refiner.

Prusas discloses one process having two alkaline peroxide impregnation steps followed by refining (col 8, lines 25-43). Prusas also teaches that additional bleaching can be done after refining. Cannell et al teaches a typical BCTMP flow process known in the art. Haynes et al teaches that pressurized refining with alkaline peroxide added either before or in the refiner as well as in post-refiner bleaching achieves more effective use of hydrogen peroxide, less scaling of process equipment, an increase in pulp yields, and lower pollution levels entering waste water facilities (col. 3, lines 55-63; col 12, lines 39-45). While Haynes et al does not teach impregnation of the chips prior to refining, the reference does teach the presence of alkaline peroxide during the refining step. It would have been obvious to one of ordinary skill in the art to use a typical BCTMP process and to look to the impregnation process of Prusas for conducting the alkaline peroxide pretreatment to enhance whiteness and brightness as well as to the pressurized refining and alkaline peroxide post treatment to obtain the advantages disclosed by Haynes et al.

4. Applicant argues on p 17 that Haynes et al uses magnesium hydroxide rather than sodium hydroxide to obtain brightness, yield and environmental advantages. Haynes et al discloses replacement of between 0 and 100%, preferably from 40 to

100%, of the sodium hydroxide with magnesium hydroxide (Abs; col 6, lines 26-31). Thus, for some embodiments of Haynes et al, 0% of the sodium hydroxide is relplaced. In addition, the open language of the instant claims allows for additional alkaline materials other than sodium hydroxide. A sodium hydroxide alkaline peroxide can also contain magnesium hydroxide. Claims 12-16 and 30-35 recite that the impregnation and blow line solutions “contain” rather than “consist of” sodium hydroxide and other specific materials.

5. Applicant argues on p 18 that neither of the references (Prusas and Haynes et al) provides a nexus to the other to lead one of ordinary skill in the art to combine them. Applicant further argues that each reference focuses on different parts of the overall process that are not compatible for integration. The arguments against compatibility have been treated above. The rational to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. *In re Fine,* 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Prusas teaches pre-refining treatment of the chips and post-refining bleaching, Haynes et al teach pre- or at-refiner treatment as well as post-refining treatment. Finally, as used in the current rejections, Cannell et al teaches a <u>typical</u> BCTMP process known to one of ordinary skill in the art comprising pre-and post-refiner treatments. One of ordinary skill in the art,

having the knowledge of a typical BCTMP process would have been motivated to combine Prusas and Haynes et al to conduct the process and obtain the advantages taught in each reference, and to do so with a reasonable expectation of success.

Claim Rejections - 35 USC § 112

6. Claims 20-23, 28-34 and 46-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 20, as amended, recites the limitation that an alkaline peroxide solution is injected through a solution inlet port located within three feet after the blow valve.

Claim 21, as amended, recites the limitation that a sodium hydroxide alkaline peroxide solution is injected to the primary pulp stream within three feet of the blow valve.

The Specification fails to provide support for the specific limitation of within three feet of the blow valve. The Specification recites on p 24, lines 6-8 that the "alkaline peroxide chemicals may be introduced immediately (from less than a few inches to a few feet) after the blow valve". While the broad limits overlap the new claim limitation, there is no support within the Specification for the narrower limitation of less than three feet. In addition, the new limitation attempts to extend the originally disclosed range by including the endpoint of zero. Again, while "less than a few inches" includes zero

inches, there is no support within the Specification for including zero inches. Claim 21 also attempts to expand the range by including locations before the blow valve. If the instant amendments had been the original intent, the Specification would have recited "within three feet of the blow valve" or a similar statement.

Claims 22-23, 28-34 and 46-47 depend from and thus carry all of the limitations of Claim 21.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-11, 18-23, 28-29, 36-39 and 42-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prusas (4,486,267) in view of Haynes et al (U 6,743,332) and further in view of Cannell et al ("The Future of BCTMP", Pulp and Paper, May 2000, supplied by applicant).

Claims 1, 6-7, 18, 20-21, 36 and 38-39: Prusas discloses an alkaline peroxide mechanical pulping process comprising the steps of: feeding a lignocellulosic material into a first press (col. 5, lines 5-12); pressing the lignocellulosic material (col. 5, lines 13-19); discharging the lignocellulosic material from the first press (col. 5, lines 13-19); impregnating the lignocellulosic material discharged from the first press with a first alkaline peroxide pretreatment solution (col. 5, lines 20-44) and maintaining the

impregnation for a first reaction time (col. 5, line 65 - col. 6, line 7); feeding the impregnated lignocellulosic material to a refiner having a rotating disc (col. 7, lines 1-4); and refining the impregnated lignocellulosic material to form a primary pulp having a temperature in generally in excess of 100°C, which meets the claimed temperature of at least 80 °C (col. 7, lines 1-4 and 8-11).

Prusas does not disclose expressly that the refiner is superatmospheric; adding alkaline peroxide to an intermediate or blow line, near the blow valve or near the separator; and discharging and retaining the pulp in a retention vessel. Although Prusas does not disclose expressly that the refiner has an inlet and a casing, it would have been obvious to a person of ordinary skill in the art that a refiner would have these features to introduce pulp to and retain pulp in a refiner since these are standard features of refiners known in the art. Prusas does disclose that, to obtain higher brightness, the pulp may be additionally bleached by known bleaching steps (col 7, lines 11-13).

Haynes et al discloses a method of making bleached mechanical pulps comprising refining pulp in an elevated temperature (between 85 and 160 °C, which meets the claimed limitation of at least about 80°C) and elevated pressure, delivering a stream of refined (primary) pulp from the superatmospheric casing of the refiner (Abs; col. 5, lines 36-41) to an intermediate line, which would be a blow line in the case of a pressurized refiner, (Fig. 2, item 224) while the primary pulp temperature is between 85 and 160 °C (meets the claimed limitation of at least about 80°C). An alkaline peroxide treatment of the pulp in the refiner or prior to the refiner is disclosed (col 12, lines 39-42,

Fig. 2, items 260, 261 and 263). In addition, a second alkaline peroxide (intermediate or blow line) solution is mixed with the stream of primary pulp within the intermediate (blow) line while the primary pulp temperature is between 85 and 160 °C (col. 5, lines 12-20 and 36-45; col. 12, lines 49-53; col. 8, lines 10-14,Fig. 2, item 262) to form a reaction mixture in the intermediate line (col. 5, lines 41-45). In some embodiments, the reacting mixture having a temperature between 85 and 160 °C is discharged into a retention vessel (col. 8, lines 10-14) and retained the reaction mixture in the retention vessel to produce a bleached material (col. 13, line 64 - col. 14, line 8). Haynes also discloses that the second addition of the alkaline peroxide (intermediate or blow line) solution can be added at vessels, cyclone cleaner, conveyors (Fig 2, blocks 218, 258, 226, 230) and all lines connected to such blocks, after the primary refiner and prior to additional refining (Fig 2, item 262) (col 12, lines 42-45, 49-53 and 58-62).

Cannell et al teaches a typical BCTMP (bleached chemical thermomechanical pulp) flow process (Fig 2, bottom of page 9 of provided article) that includes a multistage impregnation with an aqueous solution of DTPA, hydrogen peroxide and caustic, a primary refining stage, and a bleaching stage following the primary refining stage prior to any other process stages. Cannell thus teaches that pre-refining treatment with caustic and peroxide as well as post refining bleaching are typical steps practiced in the art.

The art of Prusas, Haynes et al, Cannell et al and the instant invention is analogous as pertaining to the art of producing bleached CTMP pulps. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a

superatmospheric refiner and add an alkaline peroxide solution to an intermediate or blow line, followed by discharge and retention in a vessel in the pulping process of Prusas in view of Haynes et al and further in view of Cannell et al to achieve more effective use of hydrogen peroxide, less scaling of process equipment, an increase in pulp yields, and lower pollution levels entering waste water facilities (as taught by Haynes, col. 3, lines 55-63). A solution inlet port would have been obvious to allow introduction of the alkaline peroxide (intermediate or blow line) solution into the refined pulp. Including a blow valve for discharging the solution from the pressurized refiner into the blow line would also have been obvious. Since Haynes et al discloses addition of bleaching chemicals in the lines (Fig 2, 262) between the first refiner and process equipment following the first refiner, it would have been obvious to add the alkaline peroxide (intermediate or blow line) solution near the blow valve or cyclone separator as functionally equivalent positions.

Claims 2 and 22: Prusas discloses feeding the lignocellulosic material that has been impregnated with the first pretreatment solution for a first reaction time, into a second press (col. 6, lines 8-16); pressing and discharging the lignocellulosic material from the second press (col. 6, lines 8-16); impregnating the lignocellulosic material discharged from the second press with a second alkaline peroxide pretreatment solution and maintaining the second impregnation for a second reaction time (col. 8, lines 12-18 and 32-36, Run No. 3; col. 7, lines 40-54).

Claims 3, 19, 23, and 37: Prusas does not disclose expressly adding a peroxide refiner solution at the refiner. Haynes et al discloses adding an alkaline peroxide refiner

solution to the lignocellulosic material at the refiner (col. 12, lines 39-42 and 45-53). It would have been obvious to add the alkaline peroxide solution to the refiner as well as following the refiner to obtain the previously mentioned benefits of Haynes et al.

Claims 4 and 28: Haynes et al discloses maintaining the superatmospheric casing at a pressure of 68.9 to 276 kPa (i.e., 10-40 psi, absolute pressure assumed) as a typical pressure (col. 11, lines 60-64), which range significantly overlays the claimed range of at least about 240 kPa. It would have been obvious to maintain the claimed pressure in the refiner to obtain the previously mentioned benefits of Haynes et al.

Claim 5: Haynes et al discloses that the step of mixing (Fig. 3, item 336) is immediately followed by introducing the mixture into a separator (Fig. 3, item 338) and the separated pulp is then discharged into said retention vessel (Fig. 3, item 348). It would have been obvious to maintain the disclosed sequence to obtain the previously mentioned benefits of Haynes et al.

Claim 8: Prusas discloses temperatures in refining in excess of 100°C, which contains one specific point within the claimed range of 90°C and 155°C, and a consistency of about 10 to 35%, preferably about 20 to 30%, which contains three specific points within the claimed range of about 20 to about 60% (col. 7, lines 5-13). At the time of the invention, it would have been obvious to a person of ordinary skill in the art that the temperature and consistency of the pulp delivered to an intermediate line would be about the same as the conditions in the refiner absent a step of dilution, dewatering, heating, or cooling.

Claims 9 and 10: Haynes et al discloses that the reaction mixture is retained in the retention vessel at a temperature of about 85°C to about 160°C (col. 5, lines 12-15), which contains one specific point within the claimed range of about 60°C to about 95°C for claim 9 and of about 85°C to about 95°C for claim 10, and a consistency of greater than 3% (col. 9, lines 53-55), which encompasses the claimed range of about 20% to about 40% for claim 9 and about 30% for claim 10. It would have been obvious to obtain the disclosed temperature and consistency to obtain the previously mentioned benefits of Haynes et al.

Claims 11 and 29: Prusas discloses that the impregnation solution contains alkali, peroxide, and stabilizer (col. 5, lines 20-61). Prusas does not disclose the intermediate line solution. Haynes et al discloses that the intermediate line solution contains alkali, peroxide, and stabilizer (col. 5, lines 41-45). Since the compositions of the treating solutions are similar, it would have been obvious to stabilize the peroxide in all of them. Haynes does not disclose expressly the temperature of the intermediate line solution. However, it would have been obvious to keep the temperature of the treating solution low to preserve the stability of the peroxide.

Claims 42-43: Prusas, Haynes et al and Cannell et al are applied as in the rejection of claim 1, above. Prusas discloses that, in some embodiments, the wood chips are destructured or shredded to enhance their penetration by chemical liquors in any suitable comminuting machine, thus the chips have been previously refined.

Claims 44-49: Prusas, Haynes et al and Cannell et al do not disclose the relative amounts of sodium hydroxide alkaline peroxide solution added prior to refining versus

post refining. Prusas does disclose that, to obtain higher brightness, the pulp may be additionally bleached by known bleaching steps (col 7, lines 11-13). Cannell teaches that pre-refining treatment with caustic and peroxide as well as post refining bleaching are typical steps practiced in the art. The amount of bleaching chemical added to a pulp is a known result-effective variable related to the whiteness of the pulp. It would have been obvious to one of ordinary skill in the art at the time of the invention to determine, through routine experimentation, the optimum amounts of bleaching chemicals added at the various points in the process to obtain the desired whiteness and to obtain the claimed amounts. Alternatively, it would have been obvious to add similar amounts of bleaching chemical before and after the refining step.

8. Claims 12-16 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prusas, Haynes et al and Cannell et al, as applied to claims 1-2 and 21-22 above, and further in view of Textor (3,023,140), Sandstrom et al (4,270,976), and Xu (Xu, Eric C., "Chemical Treatment in Mechanical Pulping - Part 3; Pulp Yield and Chemical Pretreatment", 1998 Pulping Conference, TAPPI Proceedings, pp. 391-402, supplied by applicant).

The transition term "contains" is open-ended and must include at least the amounts of the reagents recited, but does not preclude other reagents or larger amounts of reagent. Therefore, the Examiner has considered the amounts claimed to indicate a lower end of a range of concentrations for each reagent.

Claims 12-16: Prusas discloses that the first impregnation solution contains from about 0.5-4% by weight hydrogen peroxide (col. 5, lines 30-34), which contains the claimed limitation endpoints of 0.5% by weight for claim 14 and 15 and 0.6% by weight for claim 16. Prusas further discloses that chelating agents such as DTPA are preferably used when peroxide is used to prevent decomposition of the peroxide (col. 5, lines 45-54). Prusas discloses expressly concentrations of 0.5% DTPA (col. 5, lines 54-56) and 0.25% DTPA (col. 7, lines 43-45), which suggests a range of 0.25 to 0.5% by weight, which contains the claimed limitation endpoints of 0.3% by weight for claims 12 and 14, 0.5% by weight for claim 13, and could contain the claimed limitation of 0.2% by weight for claims 13 (2nd impregnation solution) and 15, assuming that the value is truncated.

Haynes et al discloses an acceptable alkalinity to hydrogen peroxide ratio of about 0.25 to about 3 on a weight basis (col. 7, lines 2-4). The alkalinity limitation endpoints of claims 12-16 all fall within this range. Haynes also discloses adding a chelating agent, such as DTPA, in an amount of up to 10% by weight (col. 7, lines 7-18), which encompasses the claimed limitation endpoints of claims 12-16. Haynes further discloses use of sodium silicate up to about 10% by weight (col. 7, lines 32-33), which encompasses the limitation endpoints of claims 12-16. Additionally, Haynes et al discloses a suitable amount of hydrogen peroxide is 0.45% by weight to 9% by weight (10 to about 200 pounds per ton) based on dry pulp (col. 6, lines 62-64), which encompasses the limitation endpoints for claims 12-16, and also discloses a residual

peroxide level of greater than 0.7% (col. 10, line 67 to col. 11, line 2), which also encompasses the limitation endpoints for claims 12-16.

Prusas and Haynes et al do not disclose expressly the use of magnesium sulfate or residual alkalinity.

Textor discloses an alkaline peroxide mechanical pulping process (col. 3, line 73 to col. 4, line 1) in which magnesium sulfate is used to stabilize the peroxide bleach liquor (col. 3, lines 8-9). Textor discloses expressly a concentration of .05% magnesium sulfate (col. 3, lines 4-6), which contains one specific point within the claimed range of the 1st impregnation solutions of claims 14, 15, and 16, and within the 2nd impregnation fluids of claims 15 and 16.

Sandstrom et al discloses an alkaline peroxide mechanical pulping process (col. 1, lines 9-20) in which magnesium sulfate is added to the bleach liquor in an amount of 0.1 to 0.5% of the dry lignocellulosic material (col. 3, lines 4-13), which encompasses the claimed limitation endpoints of the second impregnation solutions of claims 12 and 13, and the intermediate line solutions of claims 12, 13, and 14. The range disclosed by Sandstrom et al also contains two specific points within the claimed ranges of claim 14, lst and 2nd impregnation solutions, claim 15, 1st and 2nd impregnation solutions and intermediate line solution, and claim 16, 1st and 2nd impregnation solutions.

Xu discloses a total alkalinity residual of 0.1% in a 1st impregnation stage and 1.3% in a 2nd impregnation stage (p. 397, Table II, rows 4 and 7), and a total "total alkalinity" residual of up to 3.1 (p. 398, Table III, row 17), which contains at least one specific point within the claimed ranges of claims 12-15, intermediate line solutions.

The art of Prusas, Haynes et al, Cannell et al, Textor, Sandstrom et al, Xu and the instant invention is analogous as pertaining to the art of producing bleached CTMP pulps. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the amount of magnesium sulfate to obtain the most efficient use of the reagent as a stabilizer for the peroxide solution. It would also have been obvious to a person of ordinary skill in the art to use magnesium sulfate as described by Textor and Sandstrom et al and to provide for a residual alkalinity as described by Xu to obtain the invention as specified in claims 12-16. The motivation would have been that magnesium sulfate stabilizes the peroxide bleach liquor (Textor, col. 3, lines 8-9), and peroxide consumes part of the alkali, leaving less alkali to attack the hemicellulose, considering that alkali is commonly known to be responsible for most of the yield losses in an alkaline chemical mechanical pulping of hardwood (Xu, p. 399, lines 1-6).

Claims 30-34 are treated similarly to Claims 12-16.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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